NEW YORK STATE

DEPARTMENT OF TRANSPORTATION

# RESEARCH, DEVELOPMENT

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# TECHNOLOGY TRANSFER PROGRAM

TECHNICAL SERVICES DIVISION

Transportation Research and Development Bureau

December, 1994

# RESEARCH, DEVELOPMENT

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# TECHNOLOGY TRANSFER PROGRAM

**Prepared by**

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## FORWARD

This report is prepared as an aid to Department Staff in becoming familiar with the Department's expanded Research Development and Technology Transfer (RD&T) Program. The document sets forth the components, organizational structure and functions of the program. It also outlines the responsibilities of the different players in the RD &T process. The authors wish to thank Department staff who commented on the preliminary version of the report.

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# EXECUTIVE SUMMARY

## 1. BACKGROUND AND PURPOSE

The Department has established as one of its goals to become the national transportation leader through the development of innovative breakthrough ideas in the areas of technology and research. This newly expressed ideal coincided with the Management System Bureau's assessment of the "critical need for applied research" in every sector of NYSDOT (February 1994).

ISTEA has also recognized the role of Research Development and Technology Transfer (RD&T) activities in creating "a national intermodal transportation system that is economically efficient and environmentally sound" by substantially increasing funding for research, and requiring the expenditure of 25 % of a state's annual SPR funds for RD&T activities.

To address the Department's growing research needs and policy objectives set by state and federal leaders, the Technical Services Division is creating an expanded Department-wide research and technology transfer program. The program will provide the organizational focus to the existing, yet fragmented research activities within the Department. It will systematically define and effectively coordinate the research and technology transfer process in accordance with proposed federal requirements. It will provide the capabilities, mechanism, expertise, and strategies necessary to create an effective interactive, efficient RD&T process that will pave the way to the realization of the Department's envisioned goals.

The program will manage in-house, internal contract research and direct University Transportation Research Center (UTRC) programs; monitor Transit Cooperative Research Program (TCRP), National Cooperative Highway Research Program (NCHRP), and FHWA Pooled funds, and provide the needed support and coordination with the Department's ITS program, National Transportation Product Evaluation Program (NTPEP), FHWA internal and Contract Research Programs, and Highway Innovative Technology Evaluation Center (HITEC).

## 2. PROGRAM OBJECTIVES

a. Creation of a nucleus for strategic research needs;
b. integration of formalized Department-wide strategic thinking;
c. creation of a cross functional integration/coordination/communication mechanism;
d. efficient management of all Department-sponsored research through centralization of research management functions;
e. maximum utilization of research funds and prevention of unnecessary /unwise investments;
f. maximum return on the Department's investments;
g. compliance with federal regulations pertaining to program conditions and standards;
h. integration of innovative technology into the Department's program planning;
i. provision of a "window" to the outside world of research; and
j. creation of an effective mutually beneficial relationship with New York State Universities.

## 3. PROGRAM FUNCTIONS

- Establishes a system whereby Department strategic needs are effectively defined and program priorities are efficiently determined.
- Establishes a formal interactive cooperative process to ensure proper identification and prioritization of research needs.
- Coordinates ALL Department-sponsored research activities.
- Establishes a management control system to monitor research in progress.
- Utilizes all funds allocated for research activities efficiently and effectively.
- Screens all proposed research projects to avoid duplication of efforts.
- Implements an active technology transfer program.
- Evaluates the effectiveness of the research and technology transfer programs.
- Submits to FHWA periodic performance reports, expenditure reports, and certification of compliance with standards and conditions set by the federal rule.
- Maintains an effective working relationship with New York State Universities.

## 4. PROGRAM MANAGEMENT

The Transportation Research and Development Bureau will manage and coordinate this expanded research and technology transfer program. It will provide professional secretariat for the program. Its efforts will be supplemented by the following four entities yet to be created:

a. Research Executive Board (REB)

The Board will consist of seven Department executive managers, each representing a functional area within the Department. It will provide policy guidance, approve major program activities and formulate budget. The Department's Executive Capital Program Committee (ECPC) could be a possible source of REB membership.

b. Research & Development Council (RDC)

This council will consist of mid-level managers from each functional area within the main office, a representative from each of the Department's eleven regional offices, and a chairman. Its function will be to ensure the identification and prioritization of strategic needs of the Department.

c. Advisory Panel (AP)

This panel will consist of representatives from FHWA, academia, and private industry who will be invited to share their inputs in the agenda of the RD&T program.

d. Technical Working Groups (TWG)

These groups will be responsible for technical inputs such as development of project problem statements, and scope of services, the evaluation of Request for Proposals (RFPs), and the implementation of research results.

The program will define and coordinate research activities which are currently scattered within the Department. It will implement an active, aggressive technology transfer program, and will accomplish its mission through the creation of a management process which will systematically ensure the maximum return on the Department's research investments.

TABLE OF CONTENTS


Page

I. INTRODUCTION . . . . . 1
1. Background . . . . . 1
2. Need and Purpose . . . . . 2
3. Program Operational Objectives . . . . . 2
4. Program Functions . . . . . 4

II. ORGANIZATIONAL STRUCTURE . . . . . 7

1. Transportation Research & Development Bureau (TR&DB) . . . . . 7
2. Research Executive Board (REB) . . . . . 7
3. Research & Development Council (RDC) . . . . . 9
4. Advisory Panel (AP) . . . . . 9
5. Technical Working Group (TWG) . . . . . 9

III. RD&T WORK PROGRAM . . . . . 15

1. Phase I: Identification and prioritization of research needs . . . . . 15
2. Phase II: Formulation of Tentative research program and spending plan . . . . . 15
3. Phase III: Development of final program agenda and approval of expenditure plan . . . . . 17
4. Phase IV: Execution of the research program . . . . . 20
5. Phase V: Implementation of Technology Transfer Program . . . . . 20

IV. CONCLUSION . . . . . 27

LIST OF FIGURES . . . . .

Figure 1: Components of RD&T Program . . . . . 4
Figure 2: Functions of Technology Transfer Program . . . . . 6
Figure 3: Transportation Research & Development Bureau . . . . . 8
Figure 4: Organizational Structure of RD&T . . . . . 10
Figure 5: Annual RD&T Program Cycle . . . . . 16
Figure 6: Annual Research Cycle . . . . . 24
Figure 7: Processing of a Research Project . . . . . 25
Figure 8: Processing of a Project Through Program Areas . . . . . 26

LIST OF TABLES . . . . .

Table 1: Role of Different Players in the RD&T Process . . . . . 11
Table 2: Phase III: Development of Final Program . . . . . 19
Table 3: Phase V: Implementation of T2 Program . . . . . 23

**APPENDIXES** . . . . . 28

Appendix A: Departmental Comments on Program . . . . . 29
Appendix B: TR&DB Response to Departmental Comments . . . . . 37
Appendix C: Correspondences . . . . . 42

# I. INTRODUCTION

The 1990's witnessed the inception of a new vision for the Department, a vision of an organization that relentlessly strives to maintain its place as a national transportation leader through developing innovative transportation solutions and breakthrough ideas in the areas of technology and research. The accomplishment of this vision will entail the revival of strategic innovative research activities that not only anticipate, identify and address potential problems, but integrate technology advances into the Department's program management, execution and operations.

Emphasis of transportation policy on the integration of innovative solutions into an overall strategic planning system is becoming a dominant theme in the transportation community, as it is believed to be a crucial ingredient to survival in a new world in the transportation arena, a world conceived by ISTEA.

ISTEA has ended the separation between the modes by calling for the creation of a "national intermodal transportation system that is economically efficient and environmentally sound". It has recognized the role of research development and technology transfer activities (RD&T) in creating such a system by substantially increasing funding for research, and requiring the expenditure of 25% of a state's annual SPR funds for RD&T activities.

The Department's expanded RD&T program will pave the way to realizing state and federal envisioned goals, and to facing the challenges and adapting to the realities of the new world. It will provide the organizational focus to the existing, yet fragmented research activities within the Department. The program will systematically define and effectively coordinate research and technology transfer process in accordance with federal requirements.

The purpose of this report is to outline the framework of the Coordinated Research Development and Technology Transfer (RD&T) program which was recently approved by the Executive Capital Program Committee (ECPC). The report defines program's functions, components, goals and objectives. It also includes comments of different Departmental personnel (which were solicited prior to the approval of the program) and Transportation Research & Development Bureau's response to those comments and concerns.

## 1. BACKGROUND

The provisions of ISTEA have virtually doubled funds available for research. Federal rulemaking has considerably decentralized RD&T management functions. It has significantly changed FHWA's role from project-by-project oversight to program oversight, thus allowing the state greater authority, flexibility, as well as the primary responsibility for managing its RD&T activities supported with FHWA SPR funds. However, the state must meet certain program standards and conditions prior to grant approval. These conditions include; the creation of an interactive process for prioritization of projects; maximum utilization of SPR funds;

documentation/implementation of research results; periodic evaluation of program performance; and effective management of the program.

In response to ISTEA and subsequent federal regulations, Transportation Research and Development Bureau (TR&DB) was requested to expand its mission from solely the conduct of engineering research to include the review and coordination of ALL Department sponsored research. Such expansion was deemed imperative to establishing a formally-structured comprehensive Department wide RD&T program which would manage in-house and contract research; direct University Transportation Research (UTRC) programs; monitor and participate in the National Cooperative Highway research Program (NCHRP), Transit Cooperative Research Program (TCRP), and FHWA Pooled fund; support ITS "New York Moves" program; and provide coordination with National Transportation Product Evaluation Program (NTPEP), FHWA Contract Research Program, and Highway Innovative Technology Evaluation Center (HITEC).

ECPC has recently approved the creation of a collaborative Department-wide RD&T program to address the growing research and technology transfer needs of the Department. The program which will be managed and coordinated by Transportation R&D Bureau, will focus on a variety of transportation research fields including infrastructure, environment, planning, policy, intermodal transportation systems, innovative technology, administration, and productivity. The program will be structured and governed according to procedures described in this document.

## 2. NEED AND PURPOSE

" There is a critical need for applied research in DOT....Every sector has expressed the need for applied research at one time or another", stated the Management Systems Bureau. [1] The RD&T program outlined herein will address a basic Departmental operational need as well as broad policy objectives set by state and federal leaders.

The program will provide the focal point to define and coordinate research activities, which are currently scattered within the Department. It will provide the capabilities, mechanism, expertise, and strategies necessary to create an effective efficient interactive RD&T process that adequately address all existing and anticipated needs.

## 3. PROGRAM OPERATIONAL OBJECTIVES

a. Creation of a nucleus for strategic research planning;
b. Integration of formalized Department-wide strategic thinking;
c. Creation of a cross functional integration/coordination/communication mechanism within the Department;
d. Efficient management of all Department-sponsored research through centralization of research management functions;
e. Maximum utilization of research funds;
f. Maximum return on the Department's research investments;

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(1) " The Impact of IVHS on Structure of Engineering and Safety", Management Systems Bureau, February, 1994. PP. 29.

g. Compliance with federal regulations pertaining to program conditions and standards;
h. Integration of innovative technology into the Department's program management and execution; and
i. Establishing a "window" to the outside world of research and technological breakthroughs.
j. Creating an effective mutually beneficial relationship with NYS universities.

## 4.0 PROGRAM FUNCTIONS

**1.** Coordinates ALL Department-sponsored research activities, including federally, cooperatively, and state funded in-house and outside research activities. Figure #1 illustrates the components of the RD&T initiative which integrates all existing research programs into one annual program.

**2.** Establishes a system whereby Department strategic research needs are effectively defined and program priorities are efficiently determined. Assesses compatibility with the overall goals and objectives of the Department and the state. Undertakes a well balanced research program that includes a wide variety of research problems (hard and soft engineering areas of research).

**3.** Creates a formal interactive cooperative process to ensure comprehensiveness and responsiveness of the research program. This will be accomplished by involving all operational elements within the Department, top and mid-level management of the Department. In fact, this unique program allows each employee within the Department to play a role in setting the agenda of the RD&T program. The program will establish strong mutually beneficial relationship between the Department and NYS universities. It will strengthen avenues of communication with FHWA and the private industry.

**4.** Monitors the conduct of research through a management control system that tracks program activities, schedules, accomplishments, fiscal commitments, project progress, cost, etc. Maintains communications between researchers and potential users to ensure that needs are addressed, sound scientific methods are used and findings are credible and will be accepted for operational use.

**5.** Locates, evaluates, and continually monitors funding sources and ensures proper allocation and maximum utilization of those funds, either internally or for participation in national regional pooled or cooperatively funded studies. The program will fully utilize in-house research capabilities as well as the existing outside research programs; UTRC, NCHRP, TCRP, FHWA Pooled Funds, and USDOT's Contract Research program.

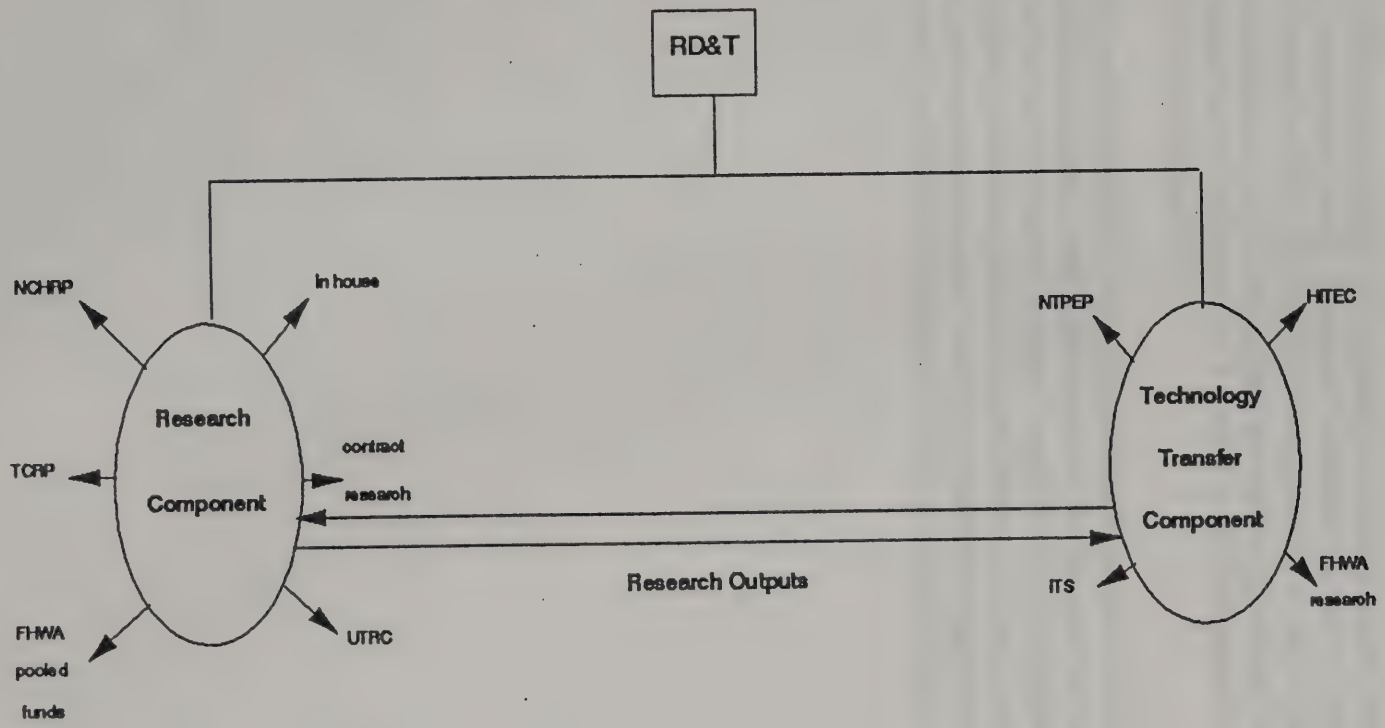
**6.** Screens proposed research problems efficiently to avoid duplication of research efforts. Documents final research reports which will include the data collected, analyses performed, conclusions and recommendations.

**7.** Ensures that the Department receives the maximum benefits from its research activities through facilitating the adoption of research outputs. This will be achieved through an active technology transfer program that includes; (a) Identification and evaluation of products emerging from the research efforts sponsored by the Department; (b) Refinement and packaging of innovative technology; and (c) Ensuring the timely use and adoption of innovative technology through effective delivery systems, such as issuing reports, manuals, etc.; conducting technical courses, presentations, seminars; providing one-on-one assistance and technical consultations for appropriate personnel.

**8.** Analyzes and documents accomplishments, effectiveness and efficiencies of research and technology transfer activities. Establishes a mechanism for periodic evaluation to assess the program's effectiveness in meeting its

Figure #1

Components of RD&T Program



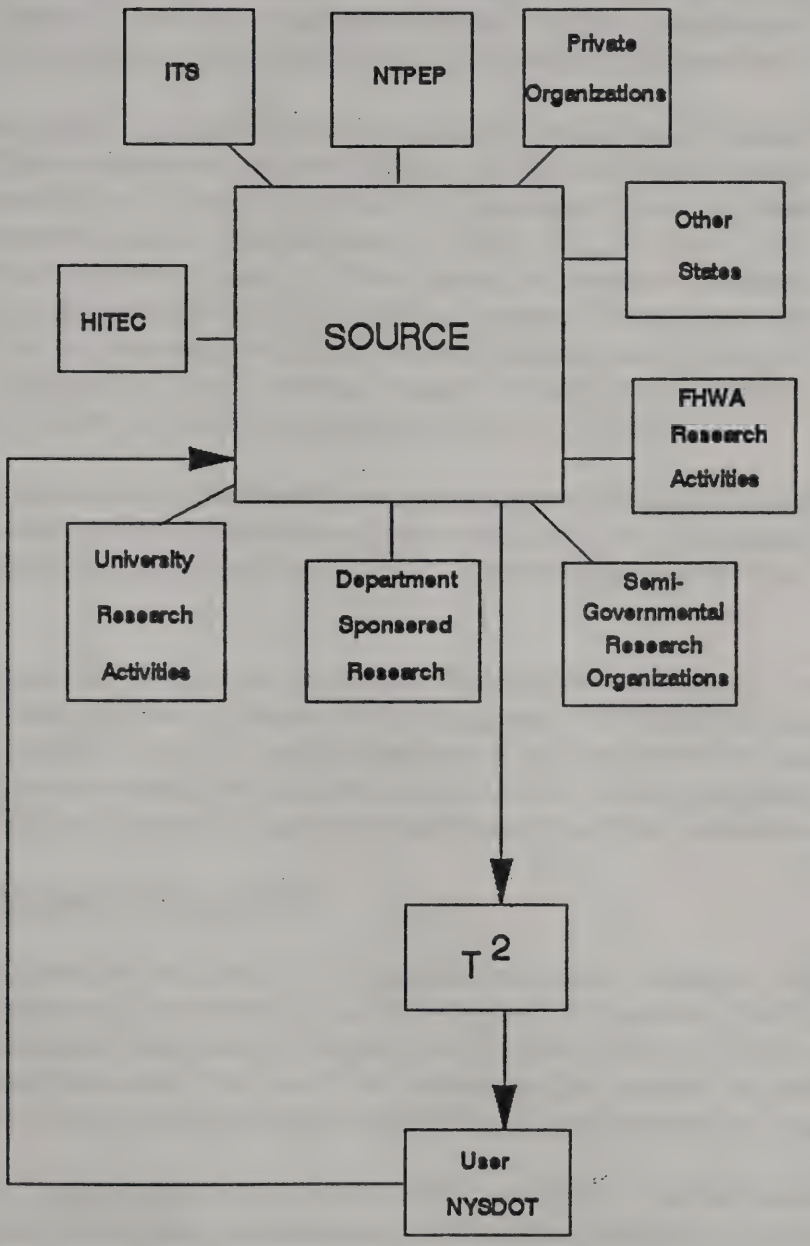
identified goals and objectives. This will be done through surveys of user perception, feedbacks from operational levels, and through a tracking system to determine which R&D products have been adopted for operational use within the state. The purpose of the evaluation is to determine benefits and success of the RD&T program, and to help update, revise and improve the program.

**9.** Strengthens the link between DOT and national governmental, non-governmental, and university-related research activities. Monitors ongoing developing and completed research conducted by others and reports such information to DOT employees through a regular newsletter geared to their needs. Thus, the program will provide a "window" through which DOT will be informed on a regular basis with the latest technologies, procedures, and policies endorsed by the transportation community around the nation. Figure # 2 illustrates the role of technology transfer activities serving as the missing link between sources of technology and users, the bridge research and practical application.

**10.** Submits to FHWA periodic performance and expenditures reports which will include comparison of actual performance with established goals. Specific measures of performance will be established for each operational goal. Quantitative as well as qualitative program benefits will be documented and analyzed. Reports will include; progress in meeting schedules; status of expenditures including a comparison of budgeted amounts and actual costs incurred; cost overruns or underruns; approved work program revisions; and supporting data. This information will be made available as advised by FHWA for peer review purposes.

Figure #2

# Functions of Technology Transfer Program




Develops/modifies new technology

Translates/redefines technology to address user needs.

Spreads information about technology to users.

Maintains and strengthens the relationship between source and user.

Implements Technology

## II. ORGANIZATIONAL STRUCTURE

### 1. Transportation Research & Development Bureau (TR&DB)

TR&DB will manage and coordinate the expanded research program which would include all Department-sponsored research. TR&DB was deemed the most suitable coordinator of this program because this bureau has played a continuing and key role in the conduct and implementation of numerous engineering research.

TR&DB is a formally structured research organization which has all essential ingredients to launch a successful coordinated Department-wide research program. The Bureau (a) has a staff of 40+ skilled employees assigned full-time responsibility for R&D activities; (b) has access to central information capability-technical library, access to computer-based information services (TRIS, RAC, DIALOG, etc.,); (c) has access to laboratory/test facilities within the Department; (d) has access to computer facilities and programming staff; (e) has professional technical writers/editors for research reports; (f) has implementation/technology transfer staff; (g) has capability to perform/evaluate valid statistical analyses; and (h) has maintained regular contacts and active cooperative arrangements with national research organizations, industry, universities, and state research organizations. (Figure #3 is an Organizational Chart of TR&DB.)

In light of the above facts, and the documented accomplishments of TR&DB in managing its existing research programs, it was considered the best candidate to launch this important initiative. The initiation of an expanded research program will round out the bureau's continuing responsibilities in the conduct/implementation of research.

TR&DB will provide professional secretariat services for the program. Two units will be established within TR&DB for managing the proposed RD&T program; The Research Coordinating Group (RCG), and the Technology Transfer Team (T2 Team). Members of those units will be comprised of TR&DB's existing staff. The units will be supervised by the Director of TR&DB. A liaison representation from FHWA will assist the T2 team. TR&DB will provide liaison for the following entities, proposed to be created:

### 2. Research Executive Board (REB)

The Executive Board will consist of six Department executive managers. Each will represent a functional area within the Department's main office, i.e. Operations, Engineering, Public Transportation, Management & Finance, Aviation & Commercial Transport, and Human Resources. Each member will be appointed by the head of the functional area. The board will provide policy guidance by identifying research emphasis areas, approve major program activities and formulate budget and expenditure plans.

The Executive Capital Program Committee (ECPC) could be a possible source of REB membership. Members of ECPC are: the First Deputy Commissioner for Policy and Resources; Assistant Commissioners of the Offices of Public Transportation, Engineering, Management and Finance, and Operations; and the directors of the Planning and Program Management Group, and Performance Improvement Division. The Commissioner serves as the Chairman of ECPC.

# TRANSPORTATION RESEARCH & DEVELOPMENT BUREAU

*MISSION: To manage a targeted engineering research and development program to enhance the quality and cost-effectiveness of engineering policies, practices, procedures, standards, and specifications. Activities performed to accomplish this mission include applied research, technical assistance, technology transfer, and engineering consultation.*

**DIRECTOR'S OFFICE (518) 457-5826**
**Fax (518) 457-7535**
**Dr. Robert J. Perry, Director**
**Nancy A. Troxell, Secretary I**

**Robert A. Valenti, Civil Engineer III**
Manages Local Technology Assistance Program Contract
Implements SHRP Research Products

## STRUCTURES

**Dr. Gongkang Fu**
**Engineering Research Specialist II**

Conducts research to develop and verify new structural design techniques and to refine existing methods.

Provides technical consultation and assistance in the area of structures.

Performs load capacity evaluations of existing structures through physical testing and analysis.

Evaluates equipment and procedures for bridge inspection and evaluation.

Performs mathematical analysis of unique structural configurations.

Provides assistance for structural evaluation and monitoring.

Performs finite element analyses.

**Dr. Sreenivas Alampalli, ERS I**
**Dr. Mohamed Elkordy, ERS I**
**Dr. Osman Hag-Elsafi, ERS I**

Everett Dillon — Adam Brockus
Jyotirmay Lall, MS — Dr. Ruijia Mu
David Elwell

## MATERIALS/PAVEMENTS

**Dr. Wei-Shih Yang**
**Engineering Research Specialist II**

Conducts research to develop new or improved specifications for construction and maintenance materials.

Confirms or develops design, construction, and maintenance practices that promote effective, economical use of materials, and that result in more economical pavements, improved service, optimized performance, and extended service life.

Provides technical assistance in the subject areas of materials and pavements.

Coordinates FHWA/SHRP long-term pavement performance activities.

Performs analyses of pavements.

**Dr. Luis Julian Bendaña, ERS I**
**Dr. M. Makbul Hossain, ERS I**
**Cheng Chou, MS, ERS I**

Hong-Jer Chen, MS — Ron Lorini
Tom Van Bramer — Rick Morgan
Dan McAuliffe — Frank Owens

## TECHNOLOGY TRANSFER/IMPLEMENTATION/ SPECIAL SERVICES

**Dr. Deniz Sandhu**
**Engineering Research Specialist II**

Conducts engineering research to develop or improve specifications and practices in areas other than structures or materials/pavements.

Provides technical assistance and consultation in various engineering subject areas.

Provides Department-wide statistical consultation.

Coordinates distribution of federal technology transfer materials.

Administers implementation of research results within the Department.

Monitors University Transportation Research Consortium projects.

Administers FHWA pooled-fund studies.

Determines the Department's desire to participate in federal demonstration projects and coordinates their scheduling.

Coordinates the federal Experimental Features program.

**Dr. Michael Mathioudakis, ERS I**
**Dr. Ossama Abd Elrahman, ERS I**
**Dr. Piotr Bajorski, Associate Statistician**

Jim Noonan — Bob Pyskadlo
Bob Rider — Suman Dhar, MS
Ed Bikowitz — Colin Campbell
Faizal Enu, MS — David Petronis

## ADMINISTRATION/PUBLICATIONS

**Mary J. Frederick**
**Administrative Assistant**

Administers fiscal management of the Department's SPR-Part II Research Program

Coordinates annual research suggestion process.

Provides editorial support to Department personnel.

Manages Department's Research Library including various on-line services to assist Department staff in performing literature searches.

Publishes various Department documents, including Bureau publications such as research reports, Quarterly R&D Digest, TNT Newsletter, Annual Briefing Report, etc.

Provides Bureau's administrative and clerical support in Human Resource Management, budget preparation and monitoring of funds and special study analyses.

**Dorothy Hogan, Librarian**
**Marie Goldston, Clerk 2**
**A. Donald Emerich, Engineering Editor**
**Donna Noonan, Drafting Technician**
**Linda Hotaling, Calculations Clerk 2**
**Jean LaClair, Keyboard Specialist**

## ELECTRONICS LAB

Designs, constructs, installs, calibrates, and repairs electrical instrumentation systems used in the collection of data for research projects.

**Bill Roth** — **Orin Mann**

As of December 29, 1994

Operating under the guidance of the Board, the following entities will formulate and execute the program.

**3. Research & Development Council (RDC)**

This council will consist of six mid-level managers from each of the following functional areas within the Department's main Office; Operations, Engineering, Public Transportation, Management & Finance, Aviation & Commercial Transport, and Human Resources, and a representative from each of the Department's eleven regional offices. The Committee will operate under the guidance of the chairman. The Director of TR&DB will serve as a permanent chair and will represent the Engineering office. The Council will be comprised of 17 members. All Council seats will be open for nomination every three years. Nominations for Council membership will be made by REB.

Emphasis will be placed on establishing a well balanced Council whose members will truly voice grassroots needs of New York state and foster a greater coordination and cooperation between the regions and the main office. The Council's function will be to identify and prioritize strategic needs of the Department and formulate the annual RD&T program.

**4. Advisory Panel (AP)**

This panel will consist of representatives from FHWA, academia, and industry who will serve as non voting ex-officio members. Members of the panel will be invited by TR&DB on an annual basis to share their input in the agenda of the RD&T program, advise on program content and evaluate program performance.

**5. Technical Working Groups (TWG)**

Members of these groups will be appointed by RDC. The groups will be responsible for providing technical input such as development of project problem statements and scope of services for proposed projects. Each group will be responsible for one of the emphasis areas which will be identified by the Executive Board.

These individuals will be designated based on an expertise directly relevant to the research proposed. Members are expected to serve throughout the life of the research, and will participate in the implementation of research results as advised by TR&DB's technology transfer team. Number of members in each group will vary depending on demand.

Figure #4 illustrates the organizational structure of players involved in the RD&T program. Table #1 provides detailed description of each player's role in the RD&T process.

Figure #4

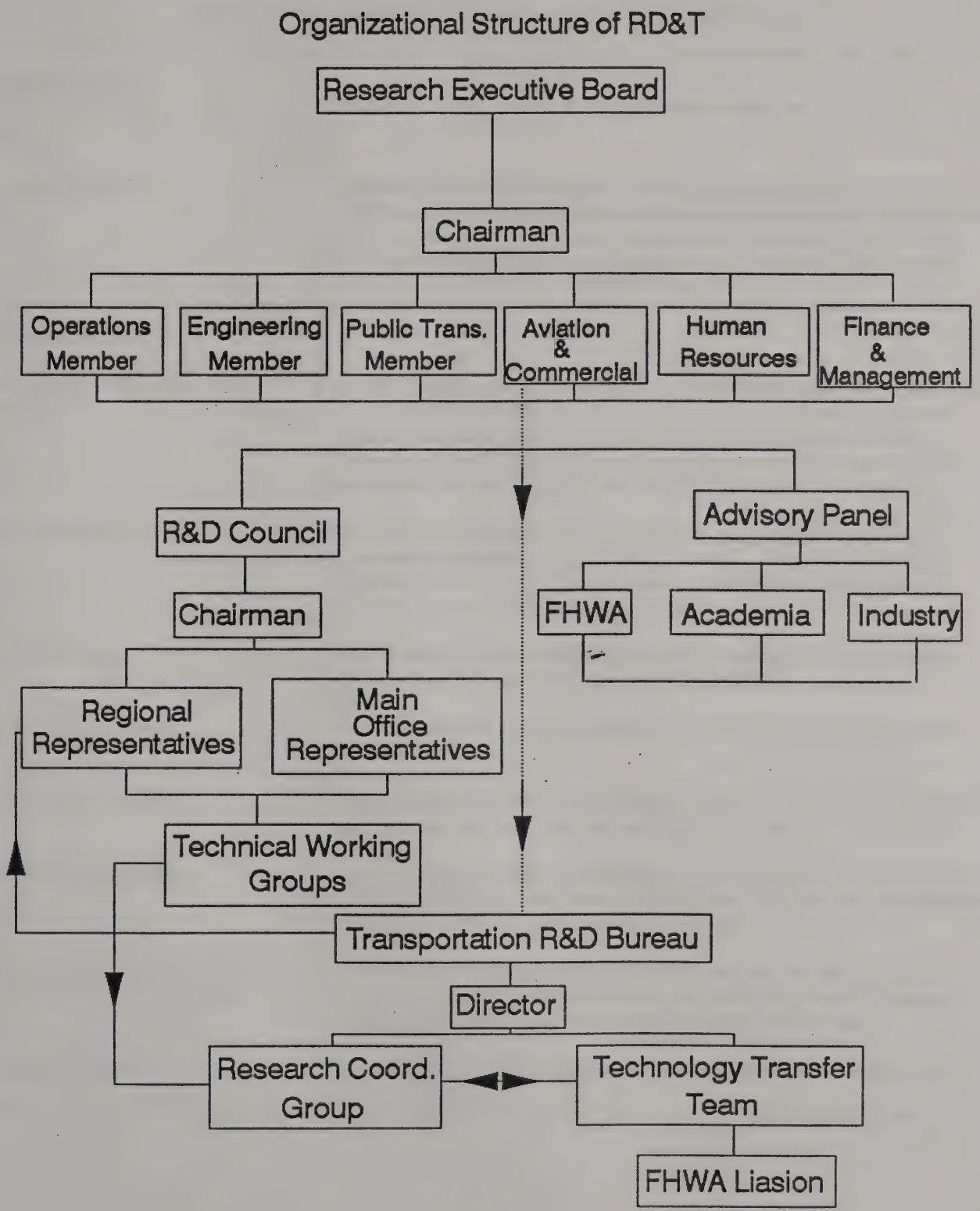

Organizational Structure of RD&T
Research Executive Board
Chairman
Operations Member
Engineering Member
Public Trans. Member
Aviation & Commercial
Human Resources
Finance & Management
R&D Council
Chairman
Regional Representatives
Main Office Representatives
Technical Working Groups
Advisory Panel
FHWA
Academia
Industry
Transportation R&D Bureau
Director
Research Coord. Group
Technology Transfer Team
FHWA Liasion

Table 1:

**ROLES OF DIFFRENT PLAYERS IN THE RD&T PROCESS**

**FIRST: TRANSPORTATION RESEARCH & DEVELOPMENT BUREAU**

| FUNCTIONAL AREA | DUTIES |
|---|---|
| a. DIRECTOR | |
| * Directing program functions | Administrates the RD&T program ; oversees all program activities;.ensures that all program procedures and administrations are carried out effectively; ensures the technical quality of final products; coordinates the activities of the program; appoints members of the Advisory Panel; acts as principal staff level liaison between players involved in the RD&T process. |
| b. Research Coordinating Group | |
| * Acting as day-to-day interface between program participants. | Maintains regular contacts with players involved in the process; provides liaison between REB, RDC, AP, and TWG; records and reports all business matters presented and acted upon by RDC, and REB; reports to REBand RDC any recommendations for change within the program or on other matters requiring the attention of RDC and REB and arranges REB, Council and Panel's meetings. |
| *Coordinating program functions | Coordinates the different segments of the R&D program with one another.; Integrates the functions of ECPC, R&D Council, Advisory Panel and the Technical Working Groups; and develops a systematic mechanism through which an effective R&D process is executed. |
| * Soliciting research needs | solicits research suggestions from Department personnel and surveys strategic issues facing the Department form RDC, AP, and REB |
| * Screening research suggestions | conducts preliminary screening of research problems, and classifies candidate problems. |
| * Developing problem statements | In coordination with the Technical Working Groups, develops first and second stage problem statements, and conducts literature reviews. |
| * Preparing Request For Proposals | Develops Request For Proposals (RFPs) for selected projects, and coordinates with Contract Management Bureau and designated proposal selection committees to ensure an efficient proposal evaluation process. |
| * Providing surveillance of research in progress.<br>* Providing acceptance reviews of project reports | Provides administrative and technical surveillance, guidance and counsel for research in progress. Issues a semi annual progress report, monitors progress schedule over the duration of the research, and evaluates final reports. |
| * Developing analytical tools. | Performs analysis to assess program effectiveness in meeting its identified goals and objectives. |

| | |
|---|---|
| c. Technology Transfer Team | |
| * Implementing tasks of the technology transfer component. | Implements tasks of the technology transfer component pertaining to ITS, HITEC, NTPEP, and FHWA internal and Contract research programs, as outlined in the document. |
| * Disseminating research results | Evaluates products emerging from Department-sponsored research, refines and packages research outputs, edits and publishes reports emanating from the program documenting research results.; and distributes reports to affected program areas within the Department. |
| * Ensuring timely and widespread use of technology | In coordination with TWG and representatives of FHWA, conducts an aggressive technology transfer program to promote the application of research results. Technical presentations, training courses and one-on-one consultations are examples of delivery systems the program will utilize to facilitate the application of research outputs. |
| * Reporting on others' research | Monitors research activities conducted elsewhere, publishes a quarterly newsletter documenting internal and external research activities particularly those sponsored by state DOTs. |
| * Preparing annual certification | Submits annual certification to FHWA demonstrating that the program has followed the conditions for grant approval specified in the rulemaking; and prepares performance reports for FHWA as deemed necessary. |
| * Evaluating overall technology transfer program. | Analyzes, evaluates, and obtains feedbacks from users on overall performance of the program and reports on its effectiveness in meeting its goals. |

**SECOND: RESEARCH EXECUTIVE BOARD**

| FUNCTIONAL AREA | DUTIES |
|---|---|
| a. Chairman of the Board:<br>Overseeing Board's functions. | Presides over meeting of the Board; directs the Board's functions; and call Board meeting as necessary to update members on procedural or terchnical matters. |
| b. Members of the Board: | |
| * Providing policy guidance | Provide broad policy guidelines through issuing an annual memorandum of understanding outlining research emphasis areas which would serve as a general criterion for project selection. These emphasis areas reflect ECPC's perception of the strategic issues facing the Department. |
| * Formulating budget | Develop an annual revenue and expenditure budget for the RD&T program.; and approve expenditure plan for each program area. |
| * Approving RD&T program | Ensure that selected projects are consistent with the objectives of the Department's operational plan. |
| * Evaluating program performance. | Serve as oversight entity ensuring the implementation of overall program goals; review and comment on the effectiveness of the program, and recommend changes/modifications as necessary. |

## THIRD: RESEARCH & DEVELOPMENT COUNCIL

| FUNCTIONAL AREA | DUTIES |
|---|---|
| **a. Chairman:**<br>Overseeing Council's functions | Presides over meeting of the Council; call Council meetings as necessary to update members on procedural and technical matters, change priorities and similar matters, and submits annually to REB on behalf of the Council a prposed consolidated program agenda. |
| **b. Members:** | |
| * Identifying strategic needs | Through collective and individual brainstorming, identify Department's strategic research needs in accordance with REB's MOU. |
| * Formulating program contents | Vote to select high priority projects and recommend a consolidated program agenda to REB. |
| * Assigning candidate projects to programs | Upon REB's approval of each program area's preliminary agenda, council assigns projects to each program. |
| * Appointing Technical Working Groups | Appoint members of the Technical Working Groups for each emphasis area. |

## FOURTH: TECHNICAL WORKING GROUPS

| FUNCTIONAL AREA | DUTIES |
|---|---|
| * Developing problem statements | In coordination with TR&DB, develop technical documents, i.e. first and second stage problem statements, RFPs, for selected projects, etc. |
| * Evaluating Request for Proposals | Evaluate project proposals and select contractors from among the agencies submitting proposals. |
| * Serving as project managers | A project manger designated for each project advises on project specifics, relates the Department's vision and objectives of the study to the agency(s) conducting the study, clarifies any ambiguities, reviews progress reports, and evaluates final reports. A project manager serves as a primary contact person within the Department. |
| * Participating in technology transfer | Participate on an as-needed basis in technology transfer activities particularly in the areas of conducting technical presentations and training courses to facilitate the application of research outputs. |

## FIFTH: RESEARCH ADVISORY PANEL

| FUNCTIONAL AREA | DUTIES |
|---|---|
| * Identifying strategic needs | Contributes to the identification of strategic needs facing the Department.; responds to surveys conducted by TR&DB staff, and participates in R&D Council brainstorming sessions. |
| * Advising on research activities | Supports and reinforces the functions of the R&D Council; and acts as an advisory expert panel available on an as-needed basis. Members serve as non- voting observers to ensure that program formulation is in consistency with broad policy direction. |

## III. RD&T WORK PROGRAM

This section sets forth the detailed programming process and operational procedures for the program. (Figure #5 illustrates the annual cycle for RD&T program.)

### 1. PHASE I: Identification and Prioritization of research needs

1. Develop memorandum of understanding (MOU)
Executive Board develops a memorandum of understanding to highlight research emphasis areas i.e. high priority areas. The MOU will serve as a primary criterion for project selection.

2. Inventory research needs
TR&DB staff solicits research suggestions from Department employees, industry, academia, and surveys strategic research needs from Advisory Panel and the R&D Council. The latter is done through individual and collective brainstorming, i.e. Panel and Council complete survey forms and meet to discuss further research needs.

3. Screen research suggestions
Members of the Technical Working Groups are designated. In coordination with designated Technical Working Groups, TR&DB conducts initial screening of research suggestions which includes conduct of literature reviews to rule out duplication, classification of candidate problems, and development of first stage problem statements for potential projects.

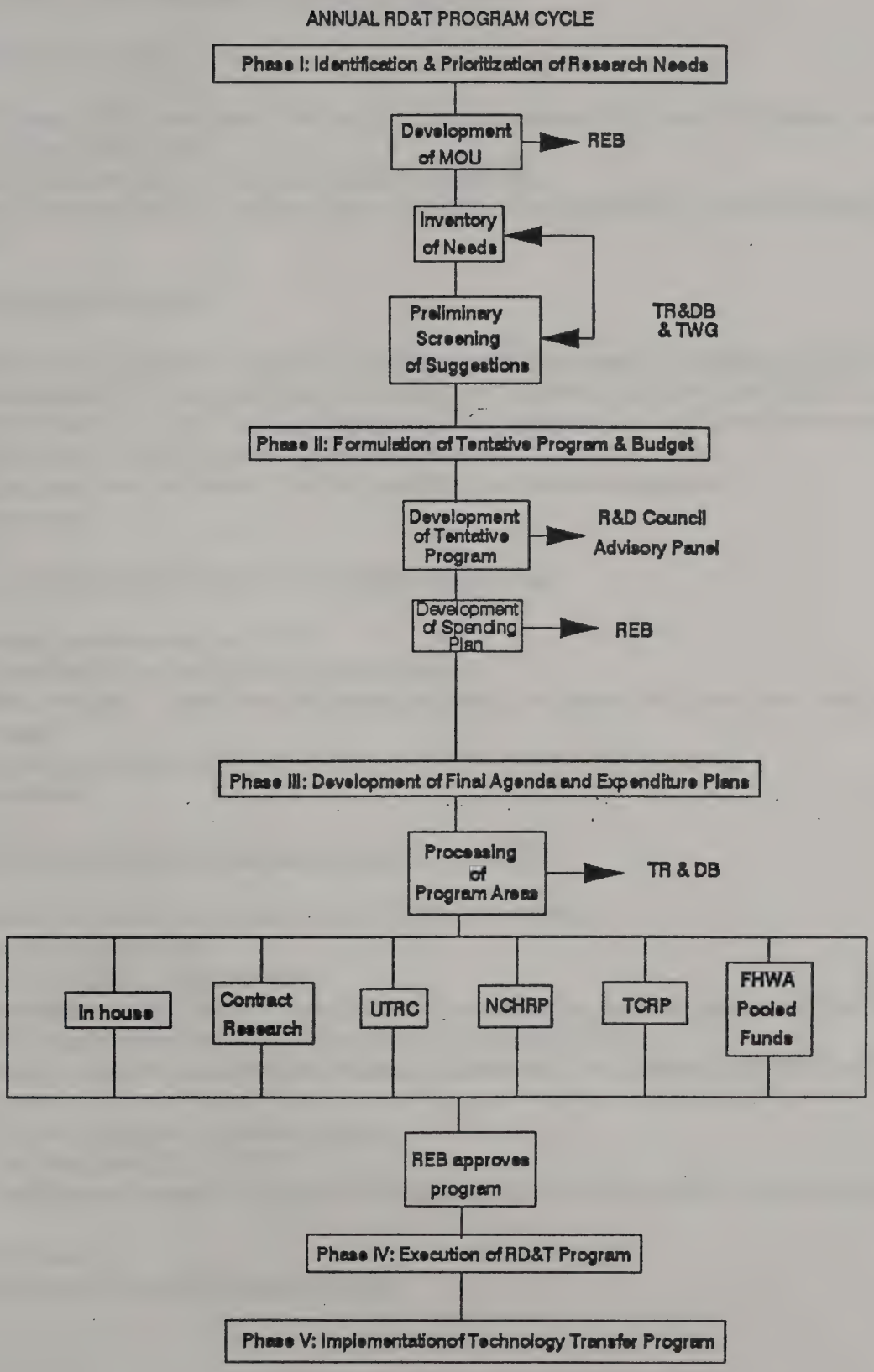
Research suggestions are screened to determine; (a) If the problem is important to the Department (Problems are evaluated against emphasis areas established by REB); (b) If the problem is researchable; (c) If the contemplated research is timely; (d) If successful research will produce significant benefits; (e) If the probability of success of the proposed study is sufficiently high; and (f) If the proposed study can be designed to avoid undesirable duplication of other completed or ongoing research.

### 2. PHASE II: Formulation of tentative research program and spending plan

1. Develop tentative program content
Candidate research suggestions as well as descriptions of proposed pooled fund studies are submitted to R&D Council for consideration in formulating the annual program. Ballot is returned to TR&DB. TR&DB compiles ratings and ranks problems. Summary of balloting is prepared and sent to RDC. RDC meets to formulate program. R&D Council members vote to select priority research projects that best address Department needs, and recommend a consolidated program agenda to Research Executive Board. TR&DB reports outcome of RDC meeting to REB.

Formulate spending plan and approve tentative program
Executive Board formulates overall annual spending plan and approves tentative agenda for each program area, i.e. distributes projects to appropriate research program areas.

Figure #5


ANNUAL RD&T PROGRAM CYCLE
Phase I: Identification & Prioritization of Research Needs
Development of MOU
REB
Inventory of Needs
Preliminary Screening of Suggestions
TR&DB & TWG
Phase II: Formulation of Tentative Program & Budget
Development of Tentative Program
R&D Council Advisory Panel
Development of Spending Plan
REB
Phase III: Development of Final Agenda and Expenditure Plans
Processing of Program Areas
TR & DB
In house
Contract Research
UTRC
NCHRP
TCRP
FHWA Pooled Funds
REB approves program
Phase IV: Execution of RD&T Program
Phase V: Implementationof Technology Transfer Program

**3. PHASE III: Development of final program agenda and approval of expenditure plans**

Projects assigned to each program area are processed as follows:

First: In-house research program

1. Transportation Research& Development Bureau staff develop scope of service for projects and outline a detailed scheduled execution plan.
2. TR&DB submits final program to Executive Board for approval.
3. Executive Board approves program and projects are assigned to appropriate personnel within TR&DB for implementation.

Second: Contract Research Program

1. Request For Proposals for approved projects are developed and distributed. [The bidding process is expected to be made predominantly by a consortium of college and university partners that TR&DB is currently soliciting. This will result in a more efficient operation of the program as it will eliminate delays that result in conducting the work through a series of separate contracts.]
2. Proposals are processed and evaluated. The best qualified proposers are selected.
3. Contracts are executed.

Third: University Transportation Research Center Program (UTRC)

1. Problem statements are submitted to UTRC.
2. UTRC solicits proposals from participating universities.
3. UTRC's project Advisory Committee evaluates proposals to select the ones that best address the Department's needs.
4. Selected projects are submitted to UTRC's Board of Directors for final approval.
5. Contracts are executed.

Fourth: National Cooperative Highway Research Program (NCHRP)

1. First stage problem statements are submitted to NCHRP secretariat.
2. NCHRP staff evaluates problems.
3. Evaluations are forwarded to TR&DB staff.
4. TR&DB in coordination with TWG develop detailed (second stage) problem statements for projects that survived NCHRP's early screening process, and submit them to NCHRP.
5. NCHRP secretariat compiles submittal to Standing Committee On Research (SCOR) who rates and formulates program.
6. NCHRP's Executive Committee approves program.
7. Project Panels are designated by NCHRP.
8. Proposals are solicited and research agencies are selected. FHWA and AASHTO approve proposals and contractors.
9. Contracts are executed.

Fifth : Transit Cooperative Research Program (TCRP)

Fifth : Transit Cooperative Research Program (TCRP)

1. Designated problems are submitted to TCRP.
2. TRB staff evaluates problems and selects candidate problems.
3. Screening workshops are conducted to evaluate candidate problem statements and recommended problems are submitted to TCRP Oversight and project Selection Committee (TOPS).
4. TOPS prioritizes problems and formulates annual program.
5. TRB reviews and approves program.
6. Designated project Panels define scope of study for each project (develop RFPs).
7. Proposals are solicited and contractors are selected from among the agencies submitting proposals.
8. Program is executed.

Sixth: FHWA Pooled Funds Program

1. TR&DB informs NYSDOT's affected program areas of R&D Council's recommendations and REB's approval to sponsor project(s) under the National and/or Regional Pooled Fund programs.
2. Affected units complete a study commitment sheet for each proposed or ongoing project.
3. Responsible units designate a state contact person for each study.
4. FHWA solicits proposals and executes contract.

(Table 2 summarizes phase III procedures).

**Table 2**
**Phase III: Development of Final Program**

| In- House | Contract Research | UTRC | NCHRP | TCRP | FHWA Pooled Fund |
|---|---|---|---|---|---|
| TR & DB staff:<br>1. Develop project's scope of service.<br><br>2. Develop scheduled execution phase.<br><br>3. REB approves program. | 1. Develop RFPs.<br><br>2. Solicit proposals.<br><br>3. TWGS evaluate proposals and select qualified proposers.<br><br>4. REB approves program. | 1. Submission of problem statements to UTRC.<br><br>2. UTRC solicits proposals.<br><br>3. UTRC's project Advisory Committees evaluate proposals and select qualified proposals.<br><br>4. UTRCs Board of Directors approves projects. | 1. Submission of first stage problem statements to NCHRP Secertariat.<br><br>2. NCHRP evaluates problems.<br><br>3. Evaluations are forwarded to TR&DB.<br><br>4. TWGs develop second stage problem statements and submit them to NCHRP.<br><br>5. NCHRP secretariat compiles problems and submits to Standing Committee on Research (SCOR).<br><br>6. SCOR rates problems and formulate program.<br><br>7. NCHRP Executive Committee approves program.<br><br>8. Project Panels are designated.<br><br>9. Proposals are solicited and agencies selected.<br><br>10. FHWA/AASHTO approves program. | 1. Problems statements are submitted to TCRP.<br><br>2. TRB evaluate problems.<br><br>3. TCRP"s Oversight and project selection Committee (TOPs) select candidate problems.<br><br>4. TOPs formulate program.<br><br>5. TRB approves program.<br><br>6. Project panels develop RFPs.<br><br>7. Proposals are solicited and contractors selected. | 1. Affected program areas are informed of projects recommended for sponsorship.<br><br>2. A study Commitment sheet for each project is completed.<br><br>3. A state contact person is designated.<br><br>4. Proposals are solicited and contracts are executed by FHWA. |
| **RESEARCH EXECUTIVE BOARD'S APPROVAL OF FINAL PROGRAM/** REVISION OF EXEPNDITURE PLAN | | | | | |

## 4. PHASE IV: Execution of the research program

1. TR&DB issues a Briefing Report on program content and funding allocations for each program area.
2. For each project, a project manager is designated from the Technical Working Group assigned the project.
3. All research in progress will be closely monitored by TR&DB and project managers. Progress reports will be reviewed. Progress schedules will be monitored. Final reports will be evaluated by TWGs and TR&DB staff.

## 5. PHASE V: Implementation of technology transfer program

This component of the program is a year round activity that includes the dissemination of Department-sponsored research outputs. This is carried out primarily by members of TWG under the direction of Transportation R&D Bureau's staff. The technology transfer component also include provision of support and coordination with the following program elements:

1. ITS "New York Moves" Program

In a study dated February 1994 investigating the impacts of ITS on the Office of Traffic Engineering & Safety's operations, the Management Systems Bureau strongly recommended TR&DB's involvement in the Department's ITS program. The investigation stated that there is "a critical need for applied research for ITS, both to manage the workload of TE&S staff and to protect the interests of the Department".

The report recommended that since "the knowledge, skills and abilities to perform applied research....exist in the Engineering Research & Development Bureau", it should provide ITS research services through its existing programs; in-house, Contract Research, and UTRC.

Accordingly, the objectives of the proposed RD&T program pertaining to the Department's ITS program are: the overall ITS workplan

(a) Facilitate the implementation of needed applied research that test new ITS products (hardware and software components) and identify the most cost-effective and efficient product(s).

(b) Facilitate the implementation of quality control and evaluation studies for the ITS program. The evaluation studies will assess functional, economic, societal and environmental effectiveness of ITS program elements.

(c) Report on performance of ongoing and completed projects included in the ITS program, and assess their applicability to other areas of the state;

(d) Monitor and report on ITS programs in other states and FHWA's IDEA research program. TR&DB has laid the foundation for its new role in supporting the "New York Moves" program with the publishing of an ITS Newsletter which will promote awareness of DOT's ITS activities within the technical community. The release of the first issue of "ITS News" is anticipated late December.

(e) Facilitate the implementation of a training program to help further the education of DOT personnel involved in ITS implementation.

The coordination between the New York Moves program and RD&T program is conceived from the belief that investments in costly new technology should come out of solid research and analysis. Moreover, policy must take into account not only the cutting edge technology, but smaller scale improvements, which might be all that is needed in some situations.

2. Highway Innovative Technology Evaluation Center (HITEC)

TR&DB's technology Transfer Team will:

(a) closely monitor the activities of HITEC;
(b) evaluate and assess the applicability of the technology in the New York State environment; and
(c) promote the application of relevant technology.

NYSDOT's involvement in HITEC's activities is imperative to keeping pace with rapid changes in innovative technology that has the potential to increase the Department's productivity.

3. FHWA internal and contract research programs

TR&DB's Technology Transfer Team will:

(a) closely monitor and report on ongoing and completed FHWA projects;
(b) evaluate results and assess applicability and relevancy to New York State;
(c) package research results and deliver to affected agencies; and
(d) promote the application of results in coordination with FHWA liaison representative.

4. AASHTO National Transportation Product Evaluation Program(NTPEP)

TR&DB's staff in coordination with appropriate program units within the Department will participate in this newly developed program which will test and evaluate existing products, materials or devices used by the states. As a member of AASHTO, the Department has agreed to commit professional and physical resources to support NTPEP as follows:

a. Submits to NTPEP coordinator an annual list of candidate test projects which will include the expected scope of the test project, and a statement of expected benefits and estimated costs.
b. Appoints up to 3 representatives from the Department to serve on NTPEP Oversight Committee who is responsible for administration of the program. The 3 Departmental representatives will have one vote on issues considered by the Committee.
c. Appoints representatives from the Department to serve on NTPEP's Project Panels who will be responsible for developing a work plan for the testing project, and preparing final reports.
d. Conducts/assists (as lead or support state) in actual testing of product(s), material(s), or type of devices, as recommended by the Oversight Committee.
e. Evaluates test results and assesses suitability for use in New York State and need for revision of specifications to better suit NYS environment.
f. Disseminate test results and promote application of test outputs.

(Table 3 summarizes T2 tasks)

Figure #6 illustrates schedule of program activities. Figures #7, and #8 provide an illustration of how a research idea is processed through the system from the point of its conception to attainment of final study products which are used to benefit the Department and enhance operations.

Table 3

**PHASE V: IMPLEMENTATION OF T2 PROGRAM**

| ITS | HITEC | FHWA RESEARCH PROGRAMS | NTPEP | DEPARTMENT SPONSORED RESEARCH |
|---|---|---|---|---|
| 1. Facilitate the implementation of needed research.<br><br>2. Monitor and report on performance of ongoing and completed projects in NYS as well as other states and disseminate information through ITS NEWS newsletter.<br><br>3. Facilitate the implementation of training programs of Departmental personnel. | 1. Closely monitor the activities of HITEC.<br><br>2. Assess the applicability of technology in NYS.<br><br>3. Promote the application of relevent technology. | 1. Monitor and report on ongoing and completed projects.<br><br>2. Evaluate results and assess applicability to NYS.<br><br>3. Deliver research outputs to affected program areas.<br><br>4. Promote the application of outputs. | 1. Develop an annual list of candadite test projects.<br><br>2. Serve as member of the Oversight Committee and project panels.<br><br>3.Conduct/assist in actual testing.<br><br>4. Evaluate test results and assess need for revision modification.<br><br>5. Disseminate and promote test results. | 1. Identify and evaluate products emerging from Department-sponsored research.<br><br>2. Refine and package technology.<br><br>3. Deliver technology.<br><br>4. Assist in the implementation of technology. |

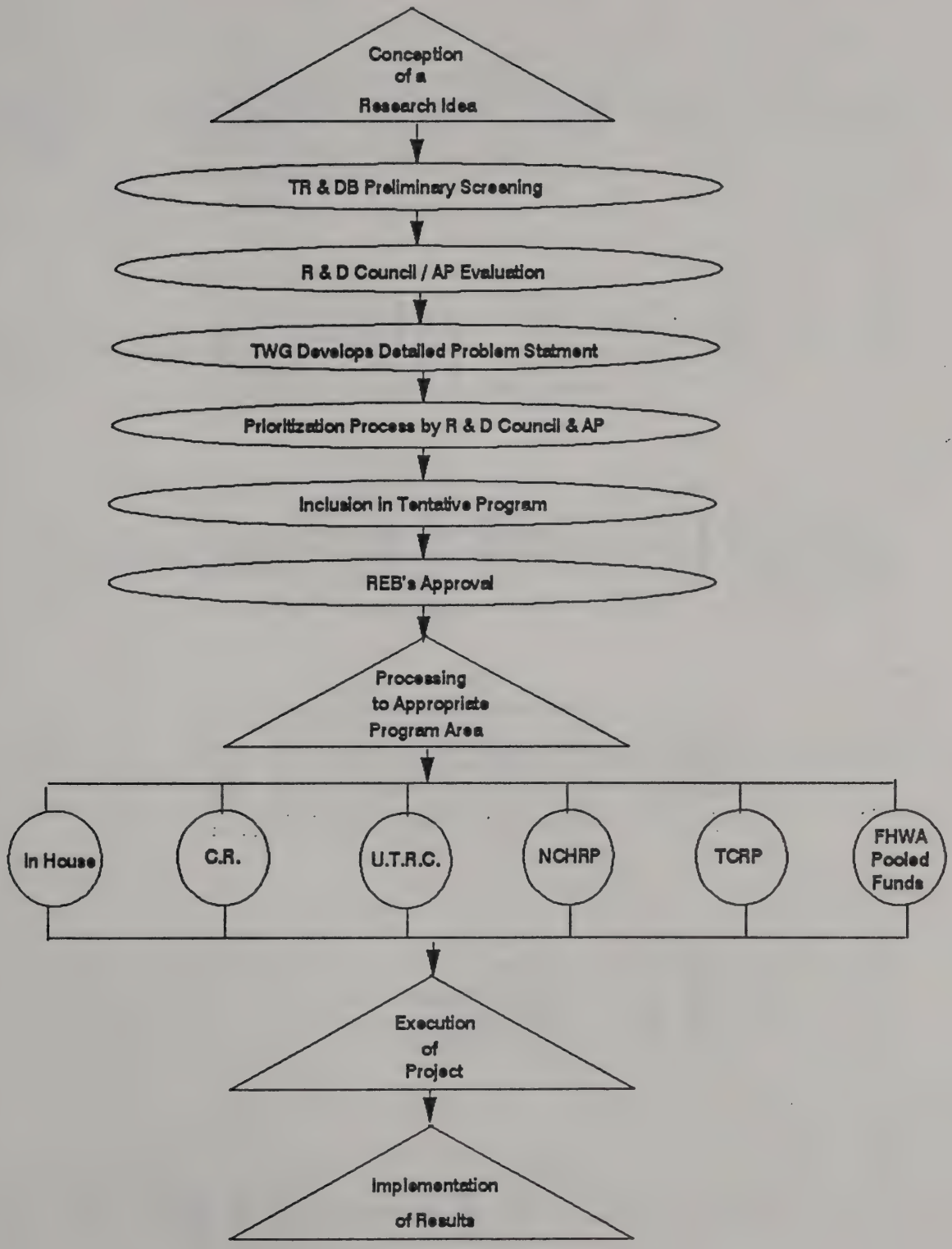
## FIGURE #6

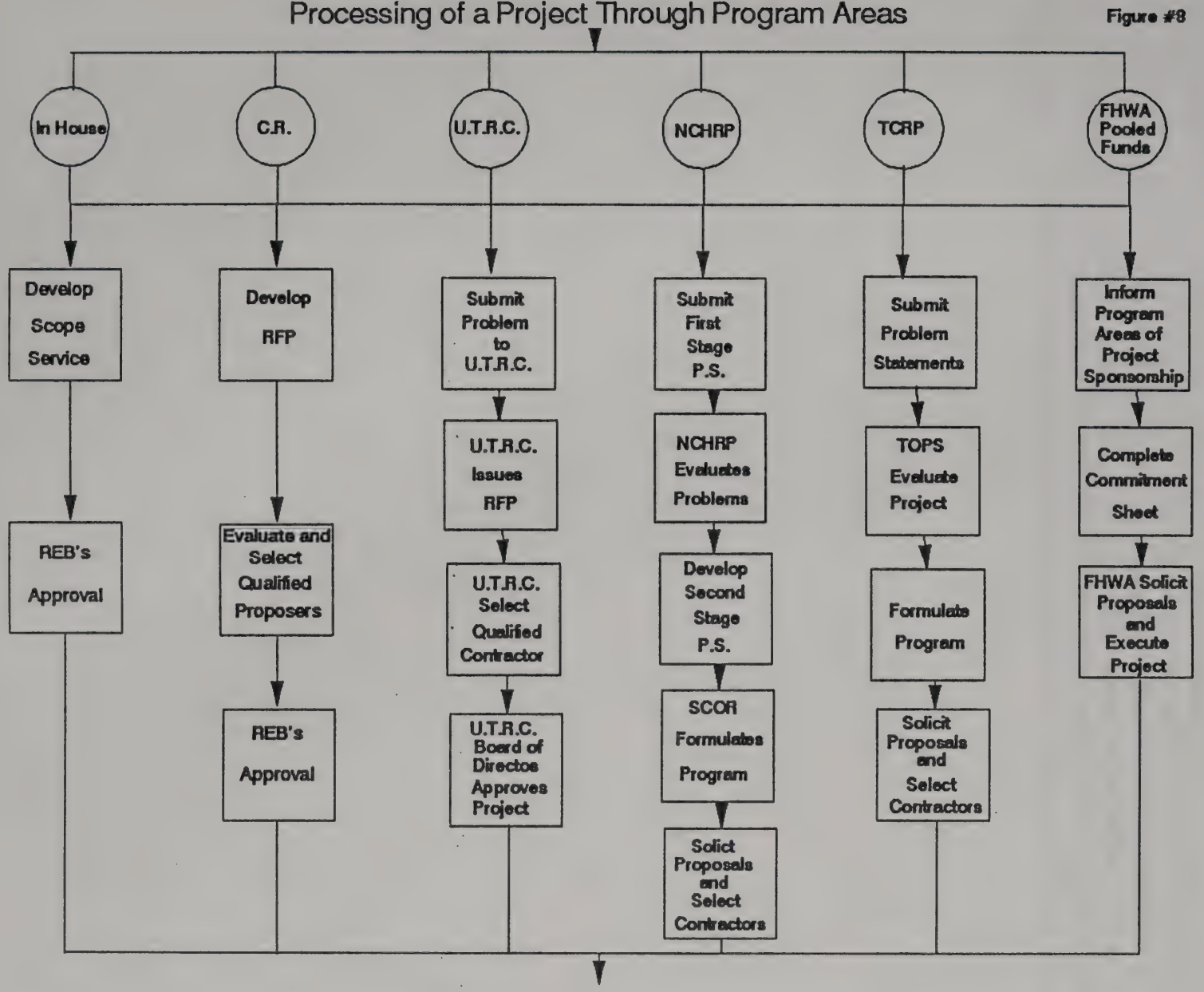
## ANNUAL RESEARCH CYCLE

| PHASE | ACTIVITY IDENTIFICATION | SCHEDULE<br>Jan. Feb. Mar. Apr.May. Jun. Jul. Aug. Sept. Oct. Nov. Dec. |
|---|---|---|
| I | Identification &Prioritization of research needs. | IIIIIIIIIII |
| II | Formulation of tentative program and budget. | IIIIIIIIIII |
| III | Development of final program agenda and approval of expenditure plans. | IIIIIII |
| IV | Program implementation | IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII |
| V | Technology Transfer. | IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII |

## Processing of a Research Project

Figure #7




Processing of a Project Through Program Areas
Figure #8
In House
C.R.
U.T.R.C.
NCHRP
TCRP
FHWA Pooled Funds
Develop Scope Service
REB's Approval
Develop RFP
Evaluate and Select Qualified Proposers
REB's Approval
Submit Problem to U.T.R.C.
U.T.R.C. Issues RFP
U.T.R.C. Select Qualified Contractor
U.T.R.C. Board of Directos Approves Project
Submit First Stage P.S.
NCHRP Evaluates Problems
Develop Second Stage P.S.
SCOR Formulates Program
Solict Proposals and Select Contractors
Submit Problem Statements
TOPS Evaluate Project
Formulate Program
Solicit Proposals and Select Contractors
Inform Program Areas of Project Sponsorship
Complete Commitment Sheet
FHWA Solicit Proposals and Execute Project

## V. CONCLUSION

There is no doubt that the 1990s marked the beginning of a new era in transportation. The changes taking place in the transportation arena are challenging much of the way we have looked at transportation issues in the past. The old approach of building infrastructure, concentrating on meeting basic needs and satisfying regulatory requirements is no longer adequate to addressing the challenges facing New York's transportation system. The effectiveness of the Department in meeting its desired goals will depend on its ability to adapt to the new realities. A forward looking strategy that emphasizes the utilization of innovative ideas and proven technologies, conceived through an effective comprehensive Department-wide RD&T program, will pave the path to a successful future.

# APPENDIXES

# APPENDIX A: DEPARTMENTAL COMMENTS ON PROGRAM

*NOTE FROM:* *September 15, 1994*

*Henry L. Peyrebrune*
*First Deputy Commissioner*

TO: Mike Cuddy
Paul Mack

RE: PROPOSAL FOR RESEARCH PROGRAM - COMMENTS

My comments...looking good.

Proposal should be 1) focal point for research and for university related research programs.

Use ECPC -- don't need another committee.

I think it should be directing...

Monitoring rest...

Highlight creating a smooth working relationship with NYS universities.

ECPC

940353

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

TO: Paul J. Mack, Technical Services Division, 7A-210

FROM: W. Stearns Caswell, Performance Improvement Division, 4-G-17 RLC for

SUBJECT: **COMMENTS ON PROPOSED COORDINATED TRANSPORTATION RESEARCH PROGRAM**

DATE: September 19, 1994

We applaud your efforts with this proposal to coordinate the Department's research effort. We think you've identified a sound structure and overall strategy to address this long-standing problem. We do, however, have a number of comments and potential concerns. Because no one likes to read long memos, we'll restrict each point to short thoughts. If any are not clear or you wish to discuss them, feel free to contact me or Turk Albertin.

1. We believe the strategic direction(s) the Department wants to take is the single most critical element to a successful research program. Left to the individual member's input, we're not sure the Research and Development Council will have the breadth of knowledge to develop the best possible research themes. As a first step ER&DB needs to facilitate a Department strategic research theme development effort. It can include the Research & Development Council, but only after a serious and structured effort to identify strategic themes. Any such effort should be tied to the results of our executive retreats and related long-term planning efforts. For example, discussions with the QIIC Bureau (Tom Boehm) might provide you with themes that have occurred in recent executive retreats. Once we have a list of potential areas where we might want to research and we are confident they tie to our overall department strategic direction, the R & D Council will have a meaningful starting point. So that we don't duplicate efforts elsewhere, ER&DB's role for the Council would be to then research what is already underway in these areas nationally.

2. A single contact point/coordinator, of an appropriate level is needed for each research fund source. These individuals need an understanding of the program, our needs in relationship to the capabilities (and weaknesses) of the research program and its members and be an

appropriate level to attend executive level meetings of the program. They should also be able to answer the questions about the program that arise during the year. Said plainly, we would discourage sending a CEII (however skilled) to a policy meeting to discuss how this year's funds will be allocated or to determine the theme for a research program.

3. The proposed ER&DB location for this coordination effort is probably the best choice but to fairly treat all areas of the Department some considerations are necessary. The group's title should be officially changed to Transportation Research & Development Bureau. (We note you use the title at one point in your proposal.) Staff should include nonengineers (at all levels) skilled in the research issues and needs in the nonengineering areas of the Department. We realize this can't be done immediately. However, one way to deal with this on the short term would be to offer rotational assignments to staff from areas identified from the themes in Issue #1. On a longer term basis, you need to review the requirements and title of the current Engineering Research series. Without these accommodations, buy-in and perception by much of the Department will suffer.

4. This proposal seems to be based on an annual cycle. How will you deal with the different cycles for each program? Also, what about requests during the year? Will they be accommodated?

5. There will be inevitable conflicts regarding what project to do or which theme gets preference. How will they be resolved?

6. No regional representation on the Executive Board?

7. You probably know better than us that research suffers from a lack of interest by many executive managers. As a result areas that are strong candidates for research don't get the attention they need. We need to stress the importance of research to managers. One way would be to include it as a component of individual performance programs. You may wish to consider this and other ways to expand managerial attention/interest in research.

Thank you for the opportunity to comment on this very important effort.

cc: M. J. McCarthy, Office of Management & Finance, 5-511
T. A. Boehm, QIIC Bureau, 4-G17
R. D. Albertin, Management Systems Bureau, 4-G17

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

TO: R. J. Perry, Engineering Research & Development Bureau, 7A-600

FROM: R. W. Tweedie, Data Services Bureau, 4-115 RWT

SUBJECT: **COMMENTS ON THE PROPOSAL TO CREATE A COORDINATED TRANSPORTATION RESEARCH PROGRAM**

DATE: OCT 5 - 1994

Thank you for the chance to comment on the proposal to create a coordinated transportation research program in the Department. Our comments are listed below:

1. This is a good idea whose time is long overdue.

2. Regarding Functional Statement #2: What system will be established to define strategic research needs? Why only hard or soft *engineering* areas of research? Why not planning? Or is planning considered soft engineering?

3. Regarding Functional Statement #4: An excellent idea. There is no sense doing research that will not be used. That is one of the best parts of the existing research project selection process and should not be dropped.

4. Right now there is little expertise in ERDB on the "soft" research areas. How can they screen all research suggestions, develop problem statements, and prepare RFPs without that expertise? We are concerned that hard engineering projects will dominate the selected program.

5. Regarding the Research Executive Board (REB) and the Research & Development Council (RDC): The concept of the proposed broad representation is good, but one seat for Public Transportation is inadequate. This will need to cover both transit and planning functional areas, and these are two very different functions. If Commercial Transport & Aviation are represented, then the transit mode should have a separate seat from planning. There is a separate transit research program at the national level. Will the members of these groups be rotating or fixed? We feel that eleven Regional representatives on the RDC will make the group unwieldy. We suggest that three is a better number, rotating among the Regions.

6. How will the members of the RDC be selected to "truely voice the grassroots needs"?

7. Will this new process impact out relationship with existing research outlets like UTRC? Will UTRC still have to match our dollars? Could planning work be funneled to UTRC participants (i.e. NPTS analysis work)?

8. How will the program be funded and at what levels?

9. The Contract Research Program section seems to imply that only colleges/universities are eligible to compete. Can the private sector participate?

If you have any questions on these comments, please call me at 457-1966.

RWT:ajn

cc: K. H. Horn, 4-115
A. J. Neveu, 4-104
N. S. Erlbaum, 4-108

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

TO: R. J. Perry, Engineering R&D Bureau, 7A-600

FROM: T. J. Gilchrist, Transit Division, 4-115 Deputy for

SUBJECT: COORDINATED TRANSPORTATION RESEARCH PROGRAM

DATE: SEP 27 1994

Thank you for the opportunity to review your proposal for creation of a Coordinated Transportation Research Program

The integration and better coordination of the various transportation research activities of DOT is certainly needed, and your proposal goes a long way towards achieving this. However, my concern is that the research activities funded by the Transit Cooperative Research Program and other similar non-engineering research conducted with Federal or State funds will be overlooked (or not given sufficient emphasis) if combined with the more extensive highway related research. The research oversight structure that you propose could address this concern if program areas, such as Transit, are properly represented at the various levels.

I would like to serve on the Research and Development Council that you propose and will recommend staff for the Technical Working Groups. I also suggest that you include a representative of the Federal Transit Administration and several representatives of the transit industry on the Advisory Panel.

If I can be of assistance, please let me know.

TJG:RJZ:jam

cc: N. R. Schneider, 5-502
D. G. Putz, 4-115
R. A. Chimera, 4-134
R. J. Zerrillo, 4-146

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

TO: Paul J. Mack, Technical Services Division, 7A/210

FROM: K. W. Shiatte, Office of Operations, 5/503

SUBJECT: **PROPOSAL FOR THE CREATION OF A COORDINATED TRANSPORTATION RESEARCH PROGRAM**

DATE: September 28, 1994

In response to your September 8, 1994 memorandum and the attached proposal for creating a coordinated transportation research program, we fully agree with the basic concepts.

The Technical Services Division has done a very thorough job in attempting to address the pitfalls of previous research activities, incorporating the strong points of the Technical Advisory and Contract Research Panels and formatting them into a cohesive group. It is also appropriate that Executive Management provide the guidance for the direction of the research efforts since it is best known at this level which direction the Department will be pursuing. This proposal appears to be a significant improvement over the existing system in terms of being responsive to the Department's overall research needs.

Additionally, to be sure that we continue to foster initiative and innovation, we would like to recommend that some thought be given to providing program areas the capability of having high priority, reasonably inexpensive, short duration research projects done without being put into a process of clearances and competing with other programs. Consideration might be given to allowing program areas to reach a resource threshold before requiring any project be put into a centralized clearinghouse and priority setting process.

We concur with the overall proposal.

cc: Barkley Berry
Thomas C. Wemer
Edward Fahrenkopf

# APPENDIX B: TR&DB'S RESPONSE TO DEPARTMENTAL COMMENTS

## RESPONSES TO COMMENTS ON PROPOSED COORDINATED TRANSPORTATION RESEARCH PROGRAM

Responses To R. Tweedie's Comments

**Q. What system will be established to define strategic research needs?**

A. Defining strategic research needs will be accomplished through the following initiatives:

1. Issuance of MOU by the Executive Board to identify research emphasis areas for the annual research cycle. This MOU will establish the strategic direction which research activities should focus on.
2. Survey of RDC and AP's perception of strategic issues facing the Department in the next five years.
3. Research needs will also be identified through the annual research solicitation process. All Department employees will be encouraged to participate in this process.
4. Screening of research suggestions to rule out duplication.
5. Prioritization of research strategic needs by RDC and AP.

**Q. Why only hard or soft engineering areas of research are included?**

A. "Soft" engineering is a term used to refer to all areas of planning, transit, management, policy etc.

**Q. How can ERDB screen all soft engineering research suggestions, develop problem statements, and prepare RFPs with little expertise in those areas?**

A. TR&DB (formerly ER&DB) has successfully administrated the Contract Research Program through which hard as well as soft engineering research projects are conducted. This program is a living proof of TR&DB's capabilities in successfully managing a coordinated department-wide research program.

TR&DB's role in the proposed RD&T program will be limited to the provision of professional secretariat. Screening of research suggestions, development of problem statements, preparation of RFPs as well as implementation of research results will primarily be done by members of designated Technical Working Groups, with TR&DB providing staff support in areas such as literature reviews, appropriate format, editing needs, publishing needs facilitation of meetings etc.

**Q. Why is there only one seat for Public Transportation in RDC ?**

A. The issue of representation and selection of members is flexible. However, number of members in the Council must be odd for voting purposes.

**Q. How will members of RDC be selected to truly voice grassroots needs ?**

A. This can only be accomplished through broad representation particularly of the regions, after all these are our real clients. A crucial element in composing a Council that would truly voice grassroots needs is to have representation from each region. Representation of the main and regional offices will combine the unique expertise available in the main office with practical real life field experience of regional representatives. This will ensure that projects conducted truly address the needs of the citizens of New York.

**Q. Will the new process impact other existing research outlets ?**

A. The proposed program will strengthen the relationship with existing research outlets such as UTRC, who will feel confident that through a formally structured research process whose goals include maximum utilization of research funds, their programs will be given adequate attention and consideration. UTRC will still have to match our dollars.

**Q. How will the program be funded ?**

A. The program will be funded mainly by federal SPR funds. 25% of those federal funds are dedicated to research activities. State funds will also be used to match UTRC funds as needed.

**Q. Can the private sector participate in the Contract Research Program ?**

A. Private research institutions can participate in the Contract Research Program. In fact, we received proposals from private institutions during the previous Cycle.

Responses To S. Caswell's Comments

**Q. Facilitate a Department strategic research theme development effort, since this cannot be efficiently made by RDC.**

A. It was never suggested that the identification of "potential areas where we might want to research" be made by RDC. The process explains clearly that this will be undertaken by the Executive Board who will be composed of executive managers. The Executive Board will issue MOU on an annual basis which will identify emphasis areas. The MOU will serve as primary criteria for prioritization of research projects and the "starting point for RDC and AP". At the executive level it is best known which direction the Department will be pursuing. Such effort will be directly "tied to the results of the executive retreats and related long-term planning efforts".

**Q. A single contact point/coordinator, of an appropriate level is needed for each research fund source.**

A. The Director of TR&DB will be the overall coordinator of the research program. He will attend executive level meetings and deliver status reports on the performance of each element. He will be assisted by sufficient staff capable of carrying out the different functions of the program efficiently and effectively.

**Q. Expand ERDB staff to include non-engineers in order to fairly treat all areas of the Department.**

A. TR&DB's role is to administrate the RD&T program. It will FACILITATE the undertaking of engineering and non-engineering research projects. It will not conduct non-engineering projects in-house, but will facilitate its conduct through outside research. The bureau will continue to serve the office of engineering's in-house research needs as well as administrate other program areas' research activities.

The issue of fairness to other areas need not be of concern since the outlined structure explains clearly that decision-making regarding which projects should be conducted is primarily made by the Executive Board

and the R&D Council who have broad representation from all Departmental employees. Screening of research projects, development of problem statements, preparation of RFPs, as well as technology transfer functions related to soft engineering areas will primarily be carried out by members of Technical Working Groups who are designated from those program areas. TR&DB's role is mainly limited to provision of professional secretariat to the program.

**Q. How will you deal with the different cycles for each program ?**

A. There is an ongoing NCHRP effort to address this issue. Requests during the year will definitely be accommodated in a subsequent cycle.

**Q. How will you resolve conflicts regarding what projects to do or which themes gets preference?**

A. There will be an ongoing communication and coordination between the Research Executive Board and the R&D Council with the former providing guidance as to which themes are more important to the Department. However, the ultimate formulation of program content will be determined through the voting process by members of RDC, yet overall program content will still be subject to REB's approval.

**Q. Why not include regional representation on the Executive Board ?**

A. As previously mentioned, the issue of representation is flexible. However, if ECPC will assume the responsibilities of the Executive Board, as suggested by the Assistant Commissioner, (please refer to related comment below), then regional representation is excluded.

Responses To J. Gilchrist's Comments

**Q. Research activities funded by the Transit Cooperative Research Program and other similar non-engineering research will be overlooked, if there was no proper representation at the various levels.**

A. We concur that transit should be given separate representation to accommodate needs of the Transit Cooperative Research Program. However, we believe that the proposed structure will ensure that adequate attention is paid to all areas of research since decision makers are composed of all program areas within the Department and emphasis areas are determined by the Executive Board. It is a program responsive to the Department's overall research needs. The Advisory Panel will include a wide variety of representatives from industry, private sector, FTA, FHWA etc.

Responses To H. Peyrebrune's Comments

**Q. Use ECPC instead of creating a Research Executive Board.**

A. We concur with the idea but we are concerned that ECPC's already overloaded schedule might place the research program on the "back burner". The success of this program will be determined by dedication of all parties involved and a strong interest in carrying out an effective program.

Responses To K. Shiatte's Comments

**Q. Give program areas the capability of conducting high priority reasonably inexpensive, short duration research projects on their own.**

A. There will be no problem in conducting such projects providing that the research will be carried out in-house by Departmental personnel, otherwise allowing program areas to conduct research projects without going through the clearinghouse will compromise the basic concept of the program and will jeopardize its effectiveness.

# APPENDIX C: CORRESPONDENCES

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

TO: H.L. Peyrebrune, Dep. Comm. for Pol. & Res., 506-5, MC 0506
M.J. Cuddy, Ofc. of Engineering, 504-5, MC 0504
M.J. McCarthy, Ofc. of Mgmt. & Finance, 511-5, MC 0511
K.W. Shiatte, Ofc. of Operations, 503-5, MC 0503
N.R. Schneider, Ofc. of Public Trans., 502-5, MC 0502
W.S. Caswell, Strat. Plng. & Mgmt. Sys., G17-4, MC 0445

FROM: T.W. Clash, Plng. & Prog. Mgmt. Group, 514B-5
TWC

SUBJECT: **APPROVED PROPOSAL FOR CREATION OF A COORDINATED RESEARCH, DEVELOPMENT AND TECHNOLOGY PROGRAM**

DATE: DEC 13 1994

This memorandum is to distribute a copy of a current version of the proposal approved by the Department for the creation of a coordinated transportation research program. This proposal was sent to you on November 2, 1994 for review and approval. Technical Services Division "staffed" the proposal throughout the Department. With the exception of minor clarification, the response by ECPC of the proposal was supportive. For this reason, it was decidied against convening the entire ECPC membership to discuss this agenda item.

For your edification, attached is a final copy of the proposal for the creation of a coordinated research, development and technology program.

TWC:RJC

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

**TO:** Assistant Commissioners
Regional Directors
Division Directors

**FROM:** Paul J. Mack, Technical Services Division, MC 0862

**SUBJECT:** **TRANSPORTATION RESEARCH AND DEVELOPMENT BUREAU**

**DATE:** December 19, 1994

To address the Department's growing research needs and policy objectives set by state and federal leaders, the Technical Services Division proposed the creation of an expanded Department-wide research and technology transfer program. The program will provide the organizational focus to the existing, yet fragmented research activities within the Department. It will systematically define and effectively coordinate the research and technology transfer process in accordance with proposed federal requirements. It will provide the capabilities, mechanism, expertise, and strategies necessary to create an effective interactive, efficient RD&T process that will pave the way to the realization of the Department's envisioned goals.

To more properly describe the changed role of the Engineering Research and Development Bureau in implementing this proposal, the Engineering Research and Development Bureau has officially changed it name to the Transportation Research and Development Bureau effective January 1, 1995.

PJM:RJP:nat

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